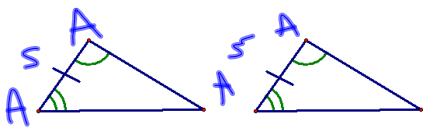
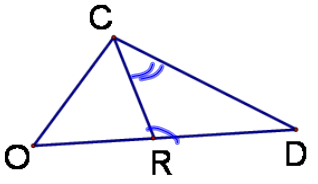
5.3 & 5.4 Proving Δs ≅ using ASA, AAS, and HL

Postulate 14—ASA—Angle-Side-Angle—If 2 ∠s and the included side of 1 △ are ≅ to 2 ∠s and the included side of a 2nd △, then the △s are ≅.



Name the included side between the 2 given angles:



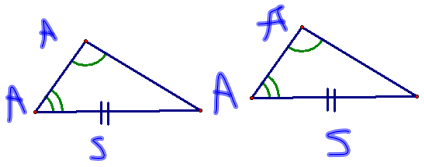
∠O + ∠CRO — $\overline{OR}$

∠O + ∠OCR — $\overline{OC}$

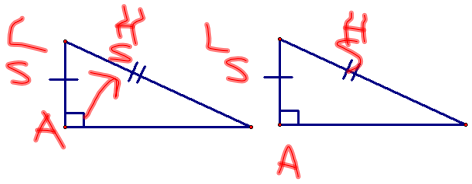
∠O + ∠D — $\overline{OD}$

∠CRD + ∠RCD — $\overline{CR}$

Theorem 5.1—AAS—Angle-Angle-Side Theorem—If 2 ∠s and a non-included side of 1 △ are ≅ to 2 ∠s and a non-included side of a 2nd △, then the △s are ≅.

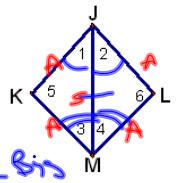


Theorem 5.2—HL—Hypotenuse-Leg Theorem—If the hypotenuse and a leg of a right △ are ≅ to the hypotenuse and a leg of a 2nd right △, then the △s are congruent.



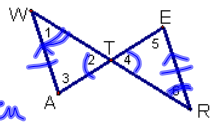
HL

1. Given: $\overline{JM}$ bisects ∠KJL and ∠KML
Prove: △JKM ≅ △JLM



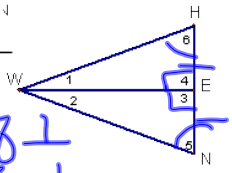
Statements	Reasons
1. $\overline{JM}$ bisects ∠KJL and ∠KML	1. Given
2. ∠1 ≅ ∠2	2. def of ∠ bis
3. ∠3 ≅ ∠4	3. " " " "
4. JM = JM	4. Reflexive
5. △JKM ≅ △JLM	ASA

2. Given: $\overline{WA} \parallel \overline{ER}$; WA = ER
Prove: △WTA ≅ △RTE



Statements	Reasons
1. $\overline{WA} \parallel \overline{ER}$; WA = ER	1. Given
2. ∠1 ≅ ∠6	2. If ||, alt int ∠s ≅
3. ∠2 ≅ ∠4	3. Vert. ∠s ≅
4. △WTA ≅ △RTE	4. AAS

3. Given: $\overline{WE} \perp \overline{HN}$; ∠5 ≅ ∠6; E is the midpoint of $\overline{HN}$
Prove: △HEW ≅ △NEW

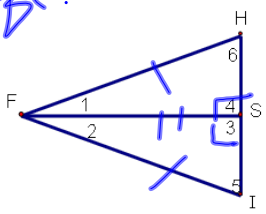


Statements	Reasons
1. $\overline{WE} \perp \overline{HN}$; ∠5 ≅ ∠6; E is the midpoint of $\overline{HN}$	1. Given
2. ∠4 is a right ∠	2. def of ⊥
3. ∠3 is a right ∠	3. def of ⊥
4. ∠3 ≅ ∠4	4. Rt ∠s are ≅
5. HE = EN	5. def of midpt
6. △HEW ≅ △NEW	ASA

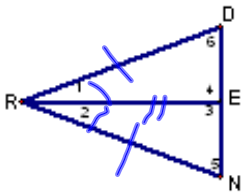
4.
Given: ΔFSH is a right triangle; ΔFSI is a right triangle; FH = FI

Prove: ΔFSH ≅ ΔFSI

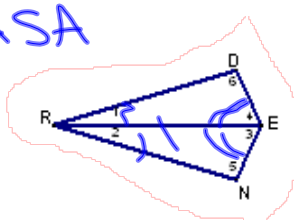
Statements	Reasons
1. ΔFSH is a right triangle; ΔFSI is a right triangle; FH = FI	1. Given
2. FS = FS	2. Refl.
3. ΔFSH ≅ ΔFSI	3. HL



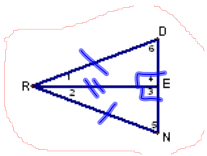
1. Given: RD = RN; $\overline{RE}$ bisects ∠DRN
Why? SAS



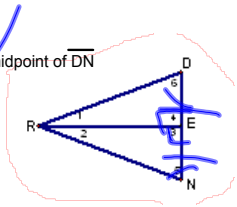
2. Given: $\overline{RE}$ bisects ∠DRN; $\overline{RE}$ bisects ∠DEN
Why? ASA



3. Given: $\overline{RE} \perp \overline{DN}$; RD = RN
Why? HL ~~SSA~~



4. Given: $\overline{RE} \perp \overline{DN}$; ∠5 ≅ ∠6; E is the midpoint of $\overline{DN}$
Why? ASA



HW
Finish worksheet